Compass-ECL-MAS — Decision Brief

Run: education_paper_20260124_160431

Dataset: simulated education dataset ($N=20,000$; mean±std over 5 seed(s))

1) Recommendation

MAS-selected: lr_K1000_g0.000_e10

Metric	Value
AUC	0.718
F1	0.389
ΔEOpp (audit on ses)	0.051
Coverage (automation rate)	1.000
Explainability entropy	1.444
#Features in explanation	6
Latency (ms, proxy)	162.438

Equity premium (performance sacrificed for equity)

Compared to the best unconstrained baseline (*lr*), the selected policy achieves a reduction of ΔEOpp by -0.024 at a cost of ΔAUC=0.001 and ΔF1=-0.058.

2) Governance guardrails (ECL)

• Fairness: ΔEOpp ≤ 0.1 (audit-only group: ses; sensitive attribute excluded from training/inference).
• Explainability: explanation entropy ≤ 1.6.
• Explainability: number of features in explanation ≤ 10.
• Forbidden predictive features: ses.
• Abstention enabled: yes (coverage controls automation budget).

3) Alternatives on the Pareto frontier

Option	candidate_id	AUC	F1	ΔEOpp	Coverage
High performance	lr_K1000_g0.000_e10	0.723	0.391	0.004	1.000
Low disparity	rf_K500_g0.000_e10	0.676	0.209	0.002	1.000

4) Practical deployment checklist

• Run a time-bounded pilot (e.g., 4–8 weeks) before scaling.
• Monitor AUC/F1 and ΔEOpp monthly; report coverage and abstention volume to quantify the automation budget.
• Define rollback triggers (e.g., ΔEOpp above threshold for 2 consecutive periods, or performance drop beyond a preset margin).
• Document decision pathways: when the system abstains, what human workflow applies, and how appeals are

handled.
• Re-evaluate constraints and thresholds with stakeholders (education experts, legal/compliance, and equity representatives).

Note: this brief is generated automatically from run artifacts (CSVs/figures) to support auditing and governance.

Appendix: Key trade-off visualization